

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-39 (Canceled)

40. (New) A process for increasing the affinity of a metal surface with respect to water, comprising the step of depositing on said surface a layer of a block copolymer, whose at least one block has phosphate and/or phosphonate functional groups, said copolymer optionally being dissolved in a solvent, water or a water/alcohol mixture.

41. (New) A process for rendering effective and lasting a subsequent application of a composition (F) on a metal surface, comprising the step of depositing first on said metal surface a layer of a block copolymer whose at least one block has phosphate and/or phosphonate functional groups, said copolymer optionally being dissolved in a solventwater or a water/alcohol mixture.

42. (New) A process for protecting a metal surface from corrosion, comprising the step of depositing on said surface a layer of a block copolymer whose at least one block has phosphate and/or phosphonate functional groups, said copolymer optionally being dissolved in a solvent, water or a water/alcohol mixture.

43. (New) The process as claimed in claim 41, wherein the deposited layer based on said block copolymer is produced by applying, to said metal surface, a solution comprising this block copolymer or by immersing said metal surface in a solution

based on the block copolymer, and by then at least partially removing the solvent initially present in this solution.

44. (New) The process as claimed in claim 41, wherein the metal of the metal surface is an alkali metal, an alkaline earth metal, a transition metal, aluminum, gallium, indium, thallium, silicon, germanium, tin, lead, arsenic, antimony, bismuth, tellurium, polonium, astatine, their oxides or their alloys.

45. (New) The process as claimed in claim 44, wherein the metal surface is aluminum, duralumin, zinc, tin, copper, bronze, brass, iron, steel, optionally stainless or galvanized, silver or vermeil.

46. (New) The process as claimed in claim 41, wherein the deposited layer of block copolymer is produced in the form of a continuous film.

47. (New) The process as claimed in claim 41, wherein the block comprising phosphate and/or phosphonate functional groups is a homopolymer based on a monomer comprising phosphate or phosphonate functional groups.

48. (New) The process as claimed in claim 41, wherein the block comprising phosphate and/or phosphonate functional groups is a random polymer based on at least one monomer comprising one or other of said phosphate or phosphonate functional groups or their mixtures in an amount of between 0.1 and 100% by weight of said monomers with respect to the total weight of the block.

49. (New) The process as claimed in claim 48, wherein the amount of said monomers is between 0.5% and 50% by weight of said monomers with respect to the total weight of the block.

50. (New) The process as claimed in claim 48, wherein the amount of said monomers is between 2% and 20% by weight of said monomers with respect to the total weight of the block.

51. (New) The process as claimed in any one of claims 47, wherein the monomer comprising phosphate or phosphonate functional groups is:

- N-methacrylamidomethylphosphonic acid ester derivative,
- N-methacrylamidoethylphosphonic acid ester derivative,
- N-acrylamidomethylphosphonic acid ester derivative,
- vinylbenzylphosphonate dialkyl ester derivative,
- diethyl 2-(4-vinylphenyl)ethanephosphonate,
- dialkylphosphonoalkyl acrylate and methacrylate derivatives,
- vinylphosphonic acid, optionally substituted by cyano, phenyl, ester or acetate groups, vinylidene- phosphonic acid, in the sodium salt form or the form of its isopropyl ester, or bis(2-chloroethyl)vinylphosphonate,
- acrylate of polyethylene glycol omega phosphates,
- methacrylate of polyethylene glycol omega phosphates,
- acrylates of polypropylene glycol omega phosphates, or
- methacrylate of polypropylene glycol omega phosphates.

52. (New) The process as claimed in claim 51, wherein the monomer comprising phosphate or phosphonate functional groups is:

N-methacrylamidomethylphosphonic n-propyl ester,

N-methacrylamidomethylphosphonic methyl ester,

N-methacrylamidomethylphosphonic ethyl ester,
N-methacrylamidomethylphosphonic n-butyl ester,
N-methacrylamidomethylphosphonic isopropyl ester,
N-methacrylamidomethylphosphonic diacid,
N-methacrylamidoethylphosphonic acid dimethyl ester.
N-methacrylamidoethylphosphonic acid di(2-butyl-3,3-dimethyl) ester
N-methacrylamidoethylphosphonic diacid,
N-acrylamidomethylphosphonic acid dimethyl ester,
N-acrylamidomethylphosphonic acid diethyl ester,
bis(2-chloropropyl) N-acrylamidomethylphosphonate,
N-acrylamidomethylphosphonic acid,
vinylbenzylphosphonate dialkyl di(n-propyl),
vinylbenzylphosphonate dialkyl ester di(isopropyl),
vinylbenzylphosphonate dialkyl ester diethyl,
vinylbenzylphosphonate dialkyl ester dimethyl,
vinylbenzylphosphonate dialkyl ester di(2-butyl-3,3-dimethyl),
vinylbenzylphosphonate dialkyl ester di(t-butyl),
vinylbenzylphosphonic diacid,
2-(acryloyloxy)ethylphosphonic acid dimethyl ester,
2-(methacryloyloxy)ethylphosphonic acid dimethyl ester,
2-(methacryloyloxy)methylphosphonic acid diethyl ester,
2-(methacryloyloxy)methylphosphonic acid dimethyl ester,

2-(methacryloyloxy)propylphosphonic acid dimethyl ester,

2-(acryloyloxy)methylphosphonic acid diisopropyl ester,

2-(acryloyloxy)ethylphosphonic acid diethyl ester,

2-(methacryloyloxy)ethylphosphonic acid,

2-(methacryloyloxy)methylphosphonic acid,

2-(methacryloyloxy)propylphosphonic acid,

2-(acryloyloxy)propylphosphonic acid, or

2-(acryloyloxy)ethylphosphonic acid.

53. (New) The process as claimed in claim 41, wherein the block copolymer is obtained as the result of a controlled radical polymerization process optionally using, as control agent, a dithioester, a thioethers-thione, a dithiocarbamate or a xanthate, said polymerization being carried out under bulk conditions, in a solvent or in an aqueous emulsion, so as to directly obtain the copolymer in the form of a solution in a solvent, water or a water/alcohol mixture.

54. (New) The process as claimed in claim 53, wherein the solution of block copolymer has a content of between 0.01 and 50% by mass, this content being expressed with respect to the total mass of the solution.

55. (New) The process as claimed in claim 54, wherein the solution of block copolymer has a content of between 0.05 and 10% by mass, this content being expressed with respect to the total mass of the solution.

56. (New) The process as claimed in claim 54, wherein the solution of block copolymer has a content of between 0.1 and 5% by mass, this content being expressed with respect to the total mass of the solution.

57. (New) The process as claimed in claim 54, wherein the block copolymer is deposited in the form of a film with a thickness of between 10 nm and 1 μ m.

58. (New) A process for the application of a film-forming composition (F) to a metal surface, comprising the following stages:

(A) applying to said surface a formulation optionally comprising a solvent, such as an organic solvent, water or a water/alcohol mixture, comprising a block copolymer, whose at least one block has phosphate and/or phosphonate functional groups, so as to form, on said surface, a deposited layer in the form of a continuous coat; and

(B) removing at least partially the solvent from the deposited layer obtained in stage (A); and

(C) applying said film-forming composition (F) to the surface, thus modified, obtained in stage (B).

59. (New) The process as claimed in claim 58, wherein the composition (F) is an aqueous dispersion of at least one polymer.

60. (New) The process as claimed in claim 58, wherein the composition (F) is an organic solution of at least one polymer.

61. (New) The process as claimed in claim 58, wherein the composition (F) is based on anhydrous mastic or polyurethane of at least one polymer.

62. (New) The process as claimed in claim 61, wherein, in stage (C), the aqueous composition (F) is applied in the form of a continuous film to the deposited layer based on the block copolymer.

63. (New) The process as claimed in claim 58, wherein, following the application of said composition (F) of stage (C), the surface covered by said composition (F) is further subjected to a stage (D) for removal of the solvent phase present in the composition applied.

64. (New) The process as claimed in claim 58, wherein the composition (F) is an optionally silicone-comprising mastic composition, paint composition or adhesive composition.